

Tern-like, or Stone-Plover-like characters which it may possess are superficial characters which appear to have been moulded upon it either through the plastic influences of similar environments and similar functional stresses, or in virtue of descent from a common ancestral type.

From what one has gleaned from an examination of the skull of the nestling Crab-Plover and of the young Tern, we feel drawn to the conclusion that an examination of embryos of these and other allied aberrant forms would point to the fact that all the Laro-Limicolæ (Gulls, Terns, Skuas, Pratincoles, Sheath-bills, Crab-Plovers, and perhaps Oystercatchers) sprang from the main Charadriiform stem prior to the division of that stem into its charadriine and scolopacine branches. Furthermore, that the scolopacine branch represents the more direct continuation of the ancestral Charadriiform stem and that the true Plovers (Charadriidæ) represent a specialised offshoot from this scolopacine continuation or from the true limicoline stem.

We shall hope in a future paper to make our meaning clearer by means of a diagram, representing the phylogenetic relationships of the whole order Charadriiformes.

XVI.—*The Denudation of the Shaft in the Motmot's Tail.*

By HUBERT D. ASTLEY, M.A., F.Z.S., M.B.O.U.

THE keeping of living birds in captivity will in many cases very much assist collectors of bird-skins and investigators in museums to solve certain moot points ; because the moults can be studied, and not infrequently the nestling plumage made known, when successful breeding comes about in an aviary. Hence it is that aviculture of late years has become a hand-maid to what is understood as scientific ornithology—an extra horse to go as a tandem and accelerate the pace.

And aviculture not only helps with regard to the study of the birds, but also in respect to their nidification, habits, and eggs, for the latter may be laid in captivity when they have never been found in the wild state, and, furthermore,

the displays of male birds can be seen and described where they may not be revealed to the collector.

A case in point is the remarkable characteristic of the Motmots, whose two long central tail-feathers grow at each moult without the racquets, which later on become so conspicuous. I have kept a Motmot (*Momotus momota*) since June 1914, and have consequently been able to study the moult through two successive autumns, and have come to the conclusion that the bird does *not* pick off the barbs from the two central shafts of the tail, but that these barbs fall away. When the feathers grow anew, the vane at the point where the barbs afterwards drop off is narrower than in any other part and, furthermore, thinner, so that light can be seen through the barbs, where it cannot pierce in the rest of the two feathers.

I am not sure whether Mr. William C. Beebe has changed his opinion, but in 1905 he remarked in his interesting book 'Two Bird-lovers in Mexico':—"Each Motmot begins to pick and pick at these feathers, tearing off a few barbs at a time with its bill"; but he does not say that he actually witnessed the performance. He also wrote at length upon the subject in 'Zoologica,'* his observations being based principally upon the study of a living bird kept by him through two moults. Mr. Beebe maintained in that article that his bird removed the barbs with its bill, but my contention that this is not the case seems rather borne out by his experiments, for after the captive Motmot had fully grown the two central tail-feathers, they were pulled out in order to study those that would replace them. In the second complete moult through which the bird passed, it was apparently not in robust health, and when Mr. Beebe removed the central tail-feathers, the fresh ones appeared enclosed in sheaths for a length of a few inches, and when these sheaths dropped away, the racquets were revealed, as far as I understand, with bare shafts above them; the barbs, that are naturally weak at these points, having been undeveloped in this case, where the bird itself had

* 'Zoologica,' New York, i. 1910, pp. 141-149.

deteriorated in strength, so that they were not pecked away. It seems therefore that the natural weakness of the vanes had been further increased through that of the bird itself, and also because an extra strain had been put upon feather-production through the plucking of those tail-feathers which had only lately grown, just as one sees feathers in weakly birds become white, owing to a deficiency in the vigour of the blood with a consequent loss of colouring pigments. Therefore, to my mind, it would seem that in the case of Mr. Beebe's Motmot, the deterioration which is perhaps gradually taking place through many ages was, as it were, artificially hastened and brought about.

The Racquet-tailed Parrots, and I presume the Kingfishers also that have these ornamental tail-feathers, grow the racquets with a portion of the shafts already bare of any barbs, and this narrowing and weakening of the barbs in the central tail-feathers of the Motmots may be working towards this in the far future.

I have *never* seen my Motmot, when preening his feathers, touch the extremities of his tail-feathers with his bill—indeed, it would almost seem as if he were unable to do so, for, owing to the feet being very small in proportion to the bird, after the style of a Kingfisher or a Roller, any extra exertion in preening is apt to overbalance the bird; so that, for instance, he only just manages to scratch the sides of his head by a rapid movement of the uplifted foot, and it is evident that his balance would be lost off his perch if he did not immediately return the foot to grasp it, as I have frequently seen happen. Magpies and other birds with long tails, such as the Indian Shâmah, can and do preen the entire length of the feathers, and one has often watched the process; but in the case of my Motmot, I have *never* seen him go beyond the shorter lateral feathers of the tail.

Be this as it may, my idea remains that the bird does not pick off the barbs above the racquets, but that they fall off without any aid on the part of their wearer.

Not until the entire moult is complete does this come

about. In a week or so after the bird is once more in full plumage, I noticed that here and there along the narrow vane, a shaft was absent, but in quite irregular spots, until at last, after perhaps about a month, the shafts are bare, and the racquets which broaden out at the extremities have appeared—or, rather, are emphasized.

My Motmot is in magnificent condition—a condition which no bird in a wild state could excel,—his vigour and tightness of plumage being very fine, so that I have a good subject to study.

As a description of my Motmot, with his interesting habits, will be published in the 'Avicultural Magazine,' along with a coloured plate of two birds, the one showing the tail as first grown, the other with the bare shafts and racquets, I will not further enlarge upon the subject or trespass upon valuable space.

XVII.—*Obituary.*

HENRY EELES DRESSER.

As was briefly announced in the last number of 'The Ibis,' Mr. Dresser died at Cannes on November 28 last, at the age of seventy-seven. He was one of the oldest members of the Union, having been elected as long ago as 1865. He held the post of Secretary from 1882 to 1888, and was always active and prominent in the affairs of the Union and in ornithology generally till a year or two ago, when he became an invalid and was no longer able to take part in our discussions.

Dresser was born on May 9, 1838, at Thirsk, in Yorkshire, where his grandfather had founded the Thirsk Bank. His father, being a younger son, migrated to London in 1845 and started as a Baltic timber-merchant. Young Dresser, after being at school at Bromley, in Kent, and at a German school near Hamburg, entered his father's business and travelled extensively in northern Europe from 1854 to 1862. Early in 1863 he took a cargo out to Texas, then